

SCOMBROID FISH POISONING AFTER INGESTION OF DOLPHIN FISH (LAMPUKI)

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Scombroid fish poisoning affecting all five members of a family from Zejtun is documented. The clinical features and the management of this condition are reviewed.

Introduction

Scombroid fish poisoning results from the ingestion of toxic substances that accumulate in improperly handled fish.(1) In October 1990 local general practitioners, health centre medical officers and emergency room staff noted a number of 'allergic' reactions related to the ingestion of Lampuki (Dolphin fish) particularly in the Zejtun area.

Case report

All 5 members of one particular family from Zejtun had fried lampuki for supper. Within 30 minutes they all developed a histamine-like reaction. The clinical features of each case are shown on Table 1.

Only one out of the five patients seen in the emergency room had respiratory distress due to bronchospasm. This responded immediately to the administration of nebulized salbutamol. All five received 25mg of promethazine intramuscularly. They all felt much better after 2 hours and in fact none of them was hospitalized. Twelve hours later they were all symptom free.

Discussion – Pathophysiology BNI

Scombroid fish poisoning is caused by the ingestion of fish with a high histamine content. Scombrototoxin is formed when bacteria on the hide of the fish (*Proteus* and *Klebsiella*) proliferate on fish protein because of improper refrigeration.(2) Free histidine is degraded to histamine by the enzyme histidine decarboxylase produced by bacteria.(3) Fig 1.

As the ingestion of free histamine even in large doses is not associated with clinical effects(4), the presence

of accompanying synergistic substances that permit the absorption of histamine from the intestine to the bloodstream has been suggested. There are two possible mechanisms. The first is the facilitation of histamine absorption by short chain aliphatic amines such as Putrescine and Cadaverine which act as 'carriers' in the intestine.(5) Fig. 2a,b. The other possibility is that other diamines in the degraded fish flesh compete for the enzyme diamine oxidase (i.e. the enzyme which metabolizes histamine).(6) Fig. 2c.

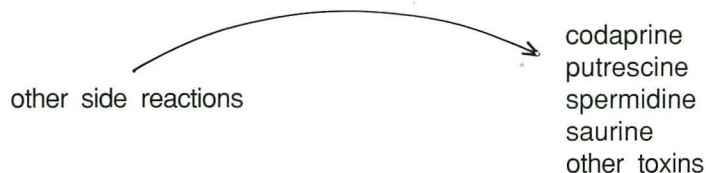
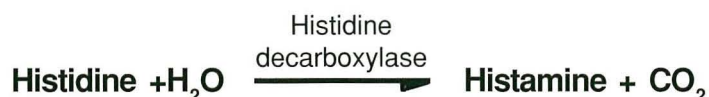


Fig. 1.

SCOMBROID POISONING

Epidemiology

This form of poisoning was originally described in Scombroid fish, but numerous other fish all over the world have been associated with this condition.(7) Dolphin fish have also been implicated.(8)

In the U.S.A. the yearly number of reported cases between 1978 and 1981 was between 30-153 involving a total of 73 outbreaks. These accounted for 5% of all reported cases of food poisoning.(7) In 1974 a large outbreak, involving 232 people was caused by canned tuna fish.(9)

Clinical features

Scombroid fish poisoning typically presents as a histamine reaction. It usually occurs in a group of people after the ingestion of the fish.

Symptoms may occur within minutes to hours of ingestion, thirty minutes on average in 27 reported outbreaks. Common symptoms are headache (44%) and flushing of the head and neck usually with a burning sensation of the mouth and throat (63%). Gastro-intestinal symptoms such as nausea (86%), abdominal cramps (71%) and diarrhoea (55%) are prominent. A bright red rash with itching or sometimes urticaria can be seen in a third of cases. In more severe cases bronchospasm and respiratory distress can occur. Tachycardia is frequently present and is sometimes accompanied by cardiac arrhythmias or hypotension.

In 27 reported outbreaks, the mean duration of symptoms was 4 hours. Most cases resolved within 24 hours. There are a few sporadic reports where symptoms persisted for 3 days. No deaths have ever been recorded.(1,9,10)

Diagnosis

Diagnosis is essentially clinical. The only laboratory test is the determination of the histamine content of the affected fish. Histamine levels

above 100mg/100g of fish are considered toxic.(11) As concentrations may vary from one part of the fish to another, multiple areas must be sampled.(12) Normally fish contains less than 1mg histamine per 100g of fish.(5) The Food and Drugs Administration of the United States has established that more than 50mg/100g of canned tuna is unacceptable

for human consumption.(8) One must note though that histamine levels as low as 20mg/100g of fish have been associated with illness.(2)

Treatment

If no gastrointestinal symptoms are present emetics should be prescribed.

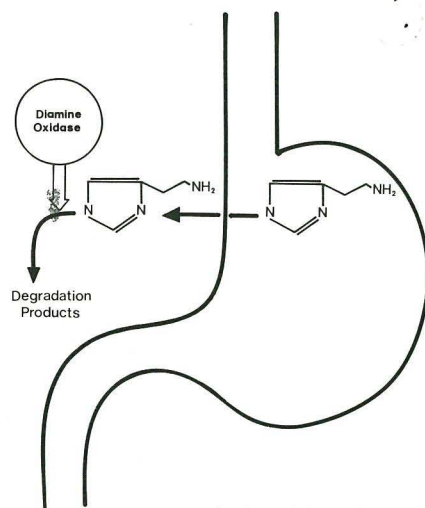


Fig 2: Normal transport and degradation of histamine by diamine oxidase

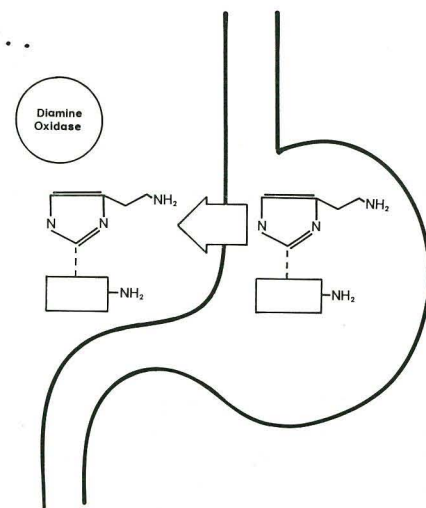


Fig. 2a: Facilitation of histamine transport by short chain aliphatic amines e.g. putresceine.

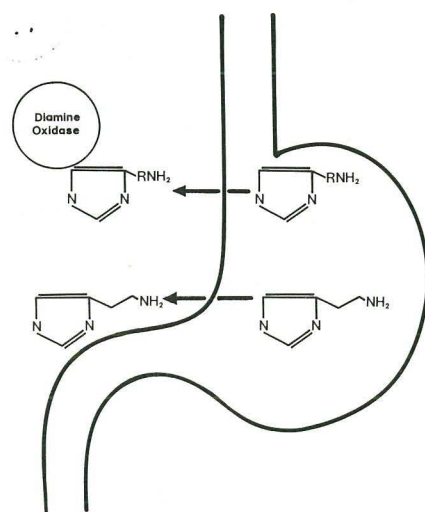


Fig. 2b: Competitive inhibition of diamine oxidase by other diamines.

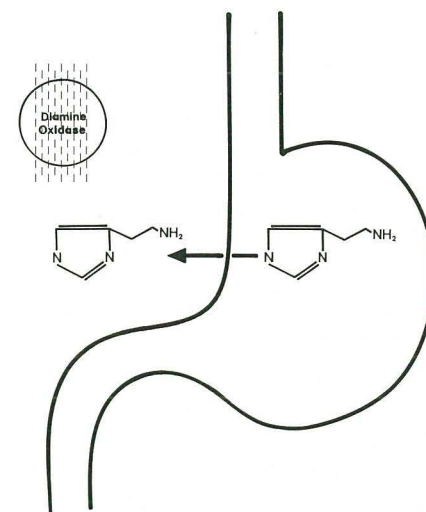


Fig. 2c: Inactivation of diamine oxidase by other inhibitors e.g. isoniazid.

SCOMBROID POISONING

SYMPTOM or SIGN	40yr M	38yr F	16yr F	20yr M	18yrs F
Headache	*	*	—	—	*
Dizziness	*	*	—	—	*
Bright red rash	—	*	—	—	*
Urticaria & itching	—	*	—	—	*
Facial flushing	*	*	*	*	*
Conjunctival injection	*	*	*	—	*
Blurred vision	—	—	—	—	—
Burning sens. mouth	*	—	—	—	—
Mouth blistering	—	—	—	—	—
Tongue swelling	—	—	*	—	—
Nausea	*	—	—	*	—
Abdominal cramps	*	*	—	*	*
Diarrhoea	—	—	—	*	—
Tachycardia	*	*	—	—	*
Bronchospasm	*	—	—	—	—
Nasal obstruction	*	*	*	—	*

* Present

— Absent

Table 1. Scombroid Poisoning. Signs and symptoms in 5 patients.

Intramuscular anti-histamines have been shown to reduce the duration of symptoms.(13) A recent report has claimed prompt resolution of symptoms with the intra-venous administration of the H2 histamine blocker cimetidine.(14) Respiratory symptoms due to bronchospasm may need sympathomimetics such as salbutamol by nebulizer or intra venous aminophylline.(2) Subcutaneous adrenaline and parenteral corticosteroids have also been used successfully but they should be reserved for the rare severe case.(14) All cases should be notified to the health authorities to enable the identification of the source so as to prevent further cases.(2) The patient should be reassured he is not allergic to fish.(2)

Public health measures

Enzymatic decarboxylation of histidine can occur readily at typical summer temperatures of around 30° Celsius.(4) Time and temperature must allow the production and accu-

mulation of histamine for the fish to become toxic.

The general public should be advised to avoid fish showing evidence of putrefaction. Early features are skin wrinkling and 'honeycombing' of the fish flesh.(9) Affected fish sometimes have a characteristic sharp and peppery taste, but unfortunately they are usually of normal taste.

The toxin is heat stable and is not destroyed by cooking, freezing, canning or smoking.(4)

The disease is totally preventable by proper refrigeration of fish at all levels of handling.(2)

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